

WATER-SAVING SHOWER HEAD AT LOW AND HIGH PRESSURETechnical Field of the Invention

5 This invention has an action within the mechanical area as well as environmental and hygienic due to the fact that its development incorporates technical characteristics that allow this device to work at low and high pressure and a considerable saving of water without losing the pleasing comfort of a shower.

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Invention Background

Water scarcity is a daily topic in the news. It is indispensable for all aspects of life. In international organisms (UN, Kyoto, Japan March 22 March 2003) The
15 topic came to a consensus and it was concluded that water scarcity is something that will accentuate in a few years and it will cause multiple problems amongst humanity.

Many campaigns, trying to make people aware of how important water-saving
20 is, have been spread in Mexico during the past few years despite this little has been achieved.

Many different technologies have been generated in trying to optimize the use if water, but those who have started these programs ended up giving up, some
25 reasons are the small appearance of such devices or by the lose of the normal water pressure when using such devices, which is a main characteristic in our country due to the fact that in most homes the only pressure available is by gravity since big water containers-deposits are located on the roofs and the water flows down to either the bathroom, another reason for low pressure is
30 mineral build up in the piping thus clogging them up easily in turn making them difficult to clean up (unclog). This is why a small minority use hydroneumatic systems to increase water pressure, so when using their shower is not an inconvenience for the people but the water consumption increases dramatically.

In application of utility model MX000712 a water-saving shower head is described, which is characterized by being mainly integrated by a bulb of water distribution chamber that spreads the water flow in a in a propelling form and is joint to an oscillating socket joint that allows it to vary its angle of inclination in reference to the water supply pipe. There is a reference of a water saving system in shower heads in patent MX152549 which is the combination of a funnel and hooks connected to the shower head, in addition to a storage tank located on the wall that distributes the water through an udder regulated by the water faucet located in the inside.

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Utility model MX000564 refers to a high efficiency shower head at low pressure that is composed of a reducer connected to the house piping, which is also connected to a water feeding pipe on one end and to an obtruding device triggered by a lever on the other end and the body is incorporated through a thread in the knuckle, for movement it uses a rounded joint that is internally included in the thread that is connected to the chamber, characterized by conical body containing a series of 28, 48 or 71 a plate of radially-equidistant conduits , with an effect of low pressure efficiency that takes advantage of the minimum water flow transforming it in a ray of water, dense enough to provide the user comfort when taking a shower.

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On the other hand patent MX 183485 describes flow distributor for shower heads that is composed of a plate with holes, a knuckle, a tubular element and it is characterized because the concentric tubular element is connected to the shower head body in such a longitude that it is located in the holed-plate of the shower head and in the coupling of the water supply of the shower head, this tubular portholes that establish the radial water flow.

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In reference to what has been mentioned, with the intention of finding an alternative to avoid the waste of water when showering, we, the applicants, of this register, have created a shower head with this purpose (economize water), We have achieved designing this device with our own new technical characteristics., that reduces the consumption of water by no less than 5 liters

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per minute, without sacrificing comfort, which used to be offered only by a high consumption of water.

Detailed Description of the Invention

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The detailed characteristics of this water-saving shower head which operates at a low and high pressure are clearly shown in the following description and the figures, submitted along this document, which are mentioned as examples and should not be considered limiting.

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Brief description of the figures:

Figure 1 is the lateral view of the water-saving shower head of this invention.

Figure 2 is the upper view of the water-saving shower head of this invention.

15 Figure 3 is the lower view of the water-saving shower head of this invention.

Figure 4 is a transversal longitudinal cut view A-A' of the water-saving shower head, where the internal details of the water distribution chambers can be observed.

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Figure 5 is the individually sectioned perspective view of the water-saving shower head.

Figure 6 is a longitudinal cut view of the socket joint, where the upper chamber can be observed.

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In reference to such figures, the water-saving shower head that operates under low and high pressure is formed primarily by a ball and socket joint, a conoid body, a ring and an impulse system which when are joined, internally contain three innovated chambers of water distribution.

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The ball and socket joint **1**, includes a tubular section **18**, that contains and internal thread **50**, where the pipes will adjust to. This section is connected to a solid sphere **19**, that is different from the conventional ones, in this spheres interior contains a superior chamber **A**, in which itself contains a small funnel **26**, that again different from the traditional ones (that only contain 1exit conduit)

this one contains 3 small longitudinal exit conduits **24**, concentric, radial and equidistant, as well as the funnel exit **26**, and the conduits **24**, lead to conic cavity **93**, as it is presented in figure 6. The superior chamber A serves to increase and distribute the water flow that comes from the pipe line.

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The conoid body **3**, in its interior contains an intermediate chamber **B**, in which is formed by a solid cylinder **70**, with a superior conic cavity **72**, with 4 longitudinal conduits **21**, concentric, radial and equidistant, which run through the solid cylinder **70**, from side to side. This chambers function is to increase the speed flow of the water. in which is directed to the impulse system **20**. Additionally, an axel **23**, is found in the inferior part of the center of the solid cylinder, in order to unite it with the impulse system **20**.

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15 The interior conic surface **22**, of the ring **99**, composes the inferior chamber **C**, that receives the water flow for its way out through the impulse system **20**.

Finally, The Impulse system **20**, which is formed by flat smooth ring **33**, that prolongs the inferior chamber **C**, which is used to support a series of four rings, different in diameter and slightly conically toothed and with a thickness between
20 5.1 and 5.7 mm. The form in which they are assembled is by introducing the slightly conical toothed rings from larger to smaller in size in the interior of the flat, smooth ring **33**. This way 52 rectangular conducts are formed **27**, circularly prepared and equidistant among each other, that impulse the way out of the water with the solidness and force, forming an adequate angle of diffusion to
25 create a wetness area that provides a comfort during the shower. This system facilitates the cleanliness' of the conduits. This by only unscrewing and adjusting the toothed rings, an advantage that does not exist with the technical state of the shower heads.

30 The manner in which the elements are assembled, is to unite the ball and socket joint **1**, with the conical body **3**, by using a nut **77**, that adjusts to the external thread **88**, of such body **3**, This body is assembled to the ring **99**, which

also assembles to impulse component with a screw that runs through the center of the impulse component that attaches to central axel 23.

5 This is the way one obtains a water-saving shower head that operates under low and high pressure, which water expense is considerably low in relation to the actual shower head technology previously mentioned. A fact that can be noticeably be seen in the following example.

10 Example 1: With the purpose of supporting the efficiency of the present invention, a comparison was carried out with a conventional shower head, at different water pressures which results are shown in table 1.

Table 1. Efficiency of the water-saving shower head vs. the conventional one.

Pressure Kg/cm ²	Waste L/H		Time of usage of 10 L per Min.	
	Normal shower head	Our shower head	Normal shower head	Our shower head
0.40	500	160	1.20	3.59
0.50	700	300	1.10	2.40
0.70	900	400	0.46	2.19
1.00	1250	500	0.31	1.39

15 Another benefit of our shower head is because of the structure of the impulse system, through our toothed rings. This system facilitates the cleanliness' of the conduits. This by only unscrewing and adjusting the toothed rings, an advantage that does not exist with the technical state of the shower heads.

20 *How the water-saving shower head works.*

25 The shower head is installed by screwing in the internal thread 50, of the ball and socket joint 1, on to the external thread from the feeding water pipe until they are perfectly joined. Once this has been done, when the water has been opened, it will flow to the superior chamber A, which structure increases the

flow until it reaches the intermediate chamber **B**, where again the flow is increased until it reaches the inferior chamber **C**, that also contributes by connecting directly with the water impulse system **20**.

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